ALAMEDA COUNTY
CONGESTION MANAGEMENT AGENCY

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TRI-VALLEY TRIANGLE STUDY
TECHNICAL ADVISORY COMMITTEE

MEETING NOTICE
(Please note time)

Thursday, August 18, 2005
9:00 AM
Regional Room
Dublin City Offices
100 Civic Plaza
Dublin, CA 94568

Agenda

1. Introductions

2. Minutes of July 26, 2005* **Action**
It is recommended that the TAC approve the attached July 14, 2005 meeting minutes.

3. Sensitivity Analysis * **Information**
At the meeting of July 26, 2005, the TAC requested corrections and/or modifications to the roadway network. The following changes have been made: 1) corrected the coding for I-580/I-680 interchange (now assumes 2-lane flyovers); 2) removed duplicate ramp assumptions (e.g., Greenville Interchange); and 3) modified the metering rates for the Isabel ramps per the City of Livermore. The attached Summary of Sensitivity Analysis reflects these modifications

4. Preliminary Packaging of Alternatives * **Action**
This is a continued item from July 26th. The following materials are included in the packet:
1) Table 1 Rough Order of Magnitude Cost Estimates for individual transportation improvements; 2) Figure 1 Map depicting the location of the improvements; and 3) Table 2 Rough Order of Magnitude Cost Estimates for the Preliminary Packages of Improvements developed at the previous TAC meeting.

The TAC is requested to review the packages for accuracy and to develop a recommendation for Improvement Packages for the Policy Advisory Committee on September 9th. Following approval by the PAC, the packages will be evaluated using the travel demand model, CORSIM model and the qualitative measures of effectiveness.

5. Next Meeting: TBD

6. Adjourn

Other Attachments

- Sign-In
- City Codes
- Concept Level Cost Estimates
- Sensitivity Study – AM Peak Hour

- Sensitivity Study – PM Peak Hour

* Materials attached
** Materials to be distributed at meeting

PARSONS
100 Park Center Plaza, Suite 450 • San Jose, California 95113
(408) 280-6600 • Fax (408) 280-7533

Date: July 26, 2005 645176/224.01

Project: Tri-Valley Triangle Study

Subject: Triangle Technical Advisory Committee Meeting Minutes

To: All who attended meeting, see attached sign-in sheet

From: Kai Chan Parsons

Enclosed are the minutes for the Triangle TAC meeting held on July 26, 2005. If you have any questions, comments, or changes to the minutes, please contact Kai Chan or Jean Hart before the next TAC meeting on August 18, 2005.

PARSONS RECORD OF MINUTES

645176/224.01

PROJECT: Tri-Valley Triangle Study

SUBJECT: Triangle TAC Meeting

DATE: July 26, 2005; 1:30 PM

LOCATION: Dublin City Hall, Regional Room
100 Civic Plaza
Dublin CA 94568

ATTENDEES: See attached sign-in sheet, Agenda, and attachments

MINUTES BY: Parsons

The purpose of the meeting was to discuss the CORSIM operations model; the travel demand model sensitivity results, and to assemble the packages of alternatives to recommend to the PAC.

The following is a summary of the meeting. Action items are shown in **bold** and critical path items are in ***bold and italicized***. Action items subsequently completed are in *italics.*

DISCUSSION	ACTION
Welcome and Introductions: Ben Strumwasser of Circle Point started off the meeting and everyone introduced themselves to the group. All three Tri-Valley cities, Caltrans, Alameda County representatives were present.	
Draft Meeting Minutes for July 14, 2005 Meeting: The Action Items from the July 14, 2005 were completed on schedule. The meeting minutes was accepted without comment by those present at the meeting.	
Operations Model: Ravi and Kai presented the CORSIM simulation for the existing year traffic operations in the I-580 corridor, validated to 2001-2002 counts. The focus of the presentation was on the westbound direction traffic operations. The eastbound direction was presented at the July 14, 2004, and the team concurred with the results. The simulation model validation was within the standard tolerance for modeling and reflected the general traffic patterns along the I-580 Corridor. The congestion areas along the I-580 corridor were shown in the simulation and presented in tables and graphic handouts. The TAC agreed that the model was satisfactory and the team should proceed with the development of the 2030 base year condition that will be used to evaluate various improvement packages. The following are some comments/questions asked during the operations model discussion: 1) In the AM, traffic sometime backs up from Vasco to Greenville. This was reflected in the simulation. 2) Are the truck scales reflected in the simulation? Yes, the speed input in the CORSIM model for the section of I-580 where the truck scales are located were adjusted to simulate the affects of the truck scales. 3) Do the Vasco I/C on-ramp volumes match the 2001-02 counts? Yes,	***Ravi will upload the revised CORSIM simulation in the FTP site, send out notice of its availability, and make copies in CD format for distribution to those team members wanting a copy.*** ***Ruben Izon and Dave Seriani requested a copy of the CORSIM simulation in CD format. Ravi to send CD. Target for***

however, the general feeling from the City of Livermore was that there is more traffic using the Vasco I/C today. The team will keep this in mind during the study. 4) Do the traffic patterns in the I-580 corridor generally match patterns today? Yes, the general traffic patterns were successfully simulated in the model. The 2030 Base years patterns are expected to change due to the influence of many factors such as land use, demand volumes, network changes; freeway operations, timing of various Tri-valley transportation improvements, trip table; transit; etc… 5) Are the ramp intersections at Hacienda and Dougherty included in the revised simulation? Yes, the CORSIM model was adjusted to account for the intersections and the signal traffic was provided by Jeff. 6) The simulation at the July 14 meeting only looked at one hour during the peak period, starting from 7:00 am, in the westbound direction. Was the revised simulation adjusted for a two-hour period? Yes, the simulation is now for two hours in both direction of I-580. 7) The proposed HOV direct connector could impact the Stoneridge I/C. There were general agreement to this comment; however, the Triangle Study is not meant to be a detailed design level traffic operations analysis. This level of analysis would typically be done later if the HOV direct connector becomes a programmed and funded project for implementation. There were questions from Mahendra about the level of queues in the simulation model at the Vasco Road EB off ramp and on ramp in the PM. In showing the simulation, it was clear that there was queuing on the EB off ramp but not on the on-ramp. Ravi said that the on ramp volumes were calibrated to the actual volumes collected 2001 and 2002, and the ramp was not at capacity; thus the queuing did not show for that particular time slice. In reviewing I-580 near Hacienda, there were comments that the speed and density, in the simulation model, appeared to be better than expected. Part of this is probably due to the model being calibrated to available traffic counts collected in 2001 and 2002, rather than existing demand or 2005 counts. Readjusting the model would be a considerable effort. The model is also showing average speed and density rather than instantaneous speed and density, which can give a difference in perception, but this averaging is a model approximation and does not affect the accuracy of the travel time and delay results. There was general agreement that the analysis could go forward despite the appearance problems. The future base case that would be used to do the comparisons of the project improvement packages would be based on demand and is expected to show more queuing. The TAC would like to see the same level of detail on the AM case: added intersection detail and two hour simulation with the actual hours of 7 AM and 8 AM used to feed the simulation. Rubin Izon, who was not on the previous emails for the ftp site notice and data table, would like these sent to him. The TAC would also like the future videos of the simulation sent by CD as it was felt that this would be easier for some users instead of just being on the ftp site because of technical or time requirements to access the ftp site. Parsons will revise the AM simulation and show it on the 26th for confirmation with the TAC.	***week of August 1.***
<u>Sensitivity Results</u>: Kym presented the summary of the sensitivity results.	***Kym/Madhav to***

The following are the comments/questions from the discussion. Please refer to the 11X17 handout.

1) For sensitivity run #3, why did the VHT, VHD, PHT increase with the addition of a mixed flow direct connector? The VHT reduced in the local jurisdiction but the VMT increased for the freeway. One reason may be that some of the trips were diverted from the local network to an already congested freeway due to the mixed flow connector. This adds to the congestion on the freeway.

2) The coding for the Isabel I/C needs to be revised. The revision is expected to result in reduced trips in the local network in Livermore, as more vehicles would stay on Rte 84 to the Isabel I/C and then to I-580.

3) The ramps at Greenville and Portola needs to be removed to reflect the future condition. Kym agreed to revise.

4) Since the new SOV connectors are expected to be over 1500 feet long, the direct connectors should be assumed to be at least two lanes in width to met Caltrans design standards.

5) For HOV director connectors, enough cross section width to accommodate two lanes is preferred, and construction of one structure for both directions could be more cost effective than having two separate direct connectors. For the purpose of the travel demand forecast study – the HOV connector should be coded as one lane, the actual cross section width of the connector could be wider to provide for future modification. For a SOV direct connector, we should code the model for a two lane facility.

6) Kym would like to confirm at the next TAC meeting the TAC's recommendation regarding the total ramp metering rate assumption for the various on-ramps along the I-580 and I-680 corridor, for the Year 2030 base case. Currently, she understands that the assumption for the year 2030 base case for all ramps would be a total PM peak hour metering rate of 600 vehicles per ramp. Isabel was to be 800 vehicles per ramp. Because each on-ramp will assume to have an HOV bypass lane, Kym wanted clarification on whether the volume entering the freeway from the on-ramp will be higher than 600 (800) vphpl or whether the HOV bypass lane is part of the total ramp metering rate. Kevin Chen confirmed that for the I-580 HOV Lane corridor project, the current assumption is that all the ramp for Year 2030 will be operating at a metering rate of 600 vphpl (per hour per lane, and the I-680 NB to I-580 EB is assumed to be at a maximum 900 vphpl.

7) Validation comments are pending from the TAC. Target date to provide comments to Kym is July 29th.

It would be helpful if the TAC would provide comments by email regarding the sensitivity runs so that the Consultant team could compile, analyze and provide responses at the next meeting. The sensitivity runs only serve to help the team decide on the improvement packages and allows the team to look at the traffic

revise coding for the Isabel I/C and redo the sensitivity runs for the TAC's review. Target for July 29.

Kym/Madhav to review Altamont count info provided by Ruben Izon.

Kym to review comments and adjust the model for the Year 2030 base case runs.

The TAC to provide comments regarding the ramp metering rates. Target for August 1st.

Kym to adjust Livermore network by next meeting.

The TAC to provide Kym with validation comments by July 29th.

Patterns in the network. It would be more cost effective to spend the team's time and effort on fine tuning the 2030 Base Case model, as this will be the basis for comparison of the various improvement packages. Preliminary Packaging of Improvement Projects: After some good discussing among the TAC members, the TAC suggested the improvement packages shown below for further testing. The TAC suggested that having some rough order of magnitude construction cost estimates would be helpful in deciding on the packaging of the improvement projects. Parsons was requested to provide some construction cost estimate for the TAC info in approximately 2-weeks. TAC to confirm for further testing the following improvement packages before the next TAC meeting. **1) WB 580 HOV, Greenville to Isabel; and Widen Route 84** **2) WB 580 HOV, Greenville to direct connector; and WB 580 to SB 680 HOV direct connector (connecting to existing I-680).** **3) WB 580 HOV, Greenville to direct connector; WB 580 to SB 680 HOV direct connector; and SB 680 HOV lane, from Alcosta to Rte 84.** **4) Truck climbing lane, from Truck scale to North Flynn Road.** **5) Widen 84; and add mixed flow lane from Isabel to Vasco Road** **6) NB 680 HOV lane, from Rte 237 to the Alcosta; NB 680 to EB HOV direct Connector; and HOV lane from director connector to the eastbound I-580 HOV lane (that is in the Year 2030 Base Case).** Next Steps/Next Meeting – July 26, 1:30 pm, Location: Dublin City Hall. The meeting will briefly discuss AM operations, review comments on the sensitivity analyses, and then concentrate on developing alternative packages for the PAC to review in August.	***Parsons to provide rough order of magnitude construction cost for the various improvement packages one week before the next TAC meeting.***

Summary of Sensitivity Analysis (assumes constant trip table between alternatives)

		Vehicle Miles of Travel (VMT) by Jurisdiction							Vehicle Hours Traveled (VHF) "free flow"	Vehicle Hours Traveled (VHT) "congested"	Vehicle Hours Delay (VHD)	Person Hours of Travel (PHT)	Truck Hours Traveled (THT)	Average Speed (free flow)	Average Speed (congested)	
Sensitivity Runs	**Peak hour**	**Alameda County**	**Dublin**	**Livermore**	**Pleasanton**	**CC County**	**State Routes**	**XX on Non-State Routes**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Observations**
Future Base Case	AM	**56,947**	**40,632**	**78,050**	**70,587**	**3,332**	**423,601**	**104,501**	**14,366**	**27,099**	**12,733**	**30,723**	**1,190**	**46.9**	**24.8**	
	PM	**67,173**	**53,126**	**86,164**	**80,625**	**4,003**	**428,824**	**127,662**	**15,735**	**32,728**	**16,993**	**37,421**	**1,402**	**45.8**	**22.0**	
1) Add I-580 westbound HOV from Greenville to I-680	AM	-1,566	-835	-2,195	-346	2	5,479	-3,307	-58	-991	-932	-1,388	-49	0.2	1.0	1) Significant reduction in VHF, VHT, VHD, PHT particularly in AM; 2) reduction of XX traffic on local system in all Tri-valley jurisdictions; 3) greatest reduction in local VMT in AM in Livermore and Alameda County; 4 in the AM second only to widening of SR84 alternative for reducing XX on non-state routes.
	PM	-137	-34	-156	-65	0	579	-188	-1	-98	-96	-132	-6	0.0	0.1	
2) Add I-580 westbound to I-680 southbound HOV direct connector (direct connector only)	AM	-88	-99	-66	-179	-1	282	-360	-9	-51	-42	-63	-2	0.0	0.0	1) Benefits both AM and PM: 2) reduction in VMT in all Tri-valley cities except Dublin in the PM where traffic from north cuts through Dublin to access I-580 instead of getting on I-680SB from the north; 3) highest decreases in VMT in Pleasanton.
	PM	-35	7	-2	-350	0	349	-288	-5	-6	-1	-13	1	0.0	0.0	
3) Add I-580 westbound to I-680 southbound Mixed Flow direct connector (direct connector only)	AM	-77	-76	1	-336	-6	11	-345	-19	-75	-56	-85	-3	0.0	0.1	1) Similar but more significant impacts to Sensitivity Run #2; 2) higher benefits in PM.
	PM	-136	80	-2	-844	1	701	-638	-17	-110	-93	-125	-1	0.0	0.1	
4) Add I-680 northbound to I-580 eastbound HOV direct connector (direct connector only)	AM	-21	-20	-19	-67	0	63	-90	-3	-40	-36	-48	-1	0.0	0.0	1) Decreases in VHT, VHD, PHT in the AM with insignificant changes in PM; 2) modest decreases in VMT in all Tri-Valley jurisdictions; 3) benefit probably limited by "gap" between direct connector and EB HOV lane.
	PM	-6	-13	0	-192	0	113	-152	-3	1	5	-2	1	0.0	0.0	
5) Add I-680 northbound HOV from SR 84 to Alcosta Blvd. (northbound HOV only)	AM	-104	-63	-1	-540	1	982	-611	-5	-211	-206	-270	-10	0.0	0.2	1) Significant decreases in VHT, VHD and PHT in both AM and PM, higher in PM; 2) reductions in VMT in all Tri-valley cities particularly in the PM; 3) in the PM second only to the widening of SR84 alternative for reducing XX on non-state routes.
	PM	-871	-241	-309	-481	6	1,795	-1,784	-26	-784	-758	-966	-22	0.1	0.5	
6) Widen SR 84 (4 lanes to Pigeon Pass, 6 lanes from Stanley Blvd to Kitty Hawk)	AM	-3,009	-1,228	-455	-5,396	0	1,028	-9,289	-219	-3,329	-3,110	-3,824	-178	0.1	3.1	1) Significant decreases in VHF, VHT, VHD, PHT, and THT in both the AM and PM; 2) highest reductions in VMT in Alameda County and Pleasanton both AM and PM.
	PM	-5,035	-1,326	-1,065	-5,057	4	3,398	-11,582	-269	-3,934	-3,665	-4,414	-150	0.2	2.7	
7) Add I-580 HOV from Greenville to N. Flynn Road (eastbound only)	AM	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	1) no impacts in the AM; 2) significant reduction in VHT, VHD, PHT and THT in the PM.
	PM	-100	0	0	0	0	100		-1	-213	-212	-275	-30	0.0	0.2	

Footnotes:

1) "-" negative means a reduction as compared to the future base case, and the number represents the unit of change.
2) "+" positive means an increase as compared to the future base case, and the number represents the unit of change.
3) Trip table is held constant for these runs.
4) This sensitivity analysis is only a quick comparison of various sensitivity runs to aid in helping the Team decide on the improvement packages

TABLE 1 - Rough Order of Magnitude Estimates for Various Improvements by Sections

Reference to Diagram	Description of Improvement (Refer to diagram)	Cost Estimate Assumptions	Preliminary and Rough Cost Estimates in 2005 dollars (millions)
A	**Truck climbing lane on eastbound I-580, from truck scale to North Flynn Road**	1) Assumes structure gap closure in median at the Greenville Road Overhead, Greenville Road Undercrossing, and Altamont Sidehill Viaduct structures. 2) assume outside widening with new structural section and retaining walls 3) widening on the outside will require relocation of freeway facilities 4) all construction assumed to be in State R/W.	$25 to $38
B	**Westbound I-580 HOV Lane from Greenville Road to Tassajara Creek**	1) Westbound direction only to Tassajara Creek (Project limit is from 600m west of centerline of Tassajara to about 630 m west of Greenville Rd). Section from Tassajara Creek to the direct connector is not included, it has it own separate estimate. 2) Existing width of median is approximately 20 feet from Tassajara to Portola. From Portola to Greenville is about 18 feet. Design exception required. 3) Widening occurs in the median with standard lane width and non-standard shoulder width (3.6-meter lane and 2.4-meter shoulder), where possible. 4) Assumes no bridge widening and/or RCB box extension. 6) Assumes no retaining wall. 7) Assumes concrete barrier, median drainage, and median grading work was done on the Eastbound HOV lane project.	$50 to $75
C	**Westbound I-580 HOV lane from Tassajara Creek to the HOV direct connector (close gap)**	1) Assumes that freeway on westbound direction of I-580 will need to be shifted to the north to accommodate the WB I-580 to I-680 Direct HOV connector 2) Includes impacts to Hacienda/Hesperian I/C 3) Changes to the Dougherty Rd I/C is included in the Director Connector estimate 3) structure section construction in the median and outside is anticipated 4) Sliver R/W acquisition west of Tassajara Creek is included 5) close gap in structure over BART is included	$24 to $37
D	**Eastbound I-580 HOV lane from the direct connector to Tassajara Creek (close gap)**	1) Assumes NB I-680 to EB I-580 HOV Connector conforms into the number one lane, the HOV lane (lane adjacent to median) 2) Design exceptions will be required at some location to avoid costly reconstruction of freeway structures on the outside of the eastbound direction of I-580. 3) construction impacts to the Hopyard Rd. and Hacienda Dr I/C are minimized on this side of the freeway, by shifting westbound I-580 to the north and leaving the eastbound I-580 alignment unchanged.	$9 t0 $14
E	**HOV direct connectors at the I-580/I-680 Interchange (both directions)**	1) Assumes westbound I-580 is shifted to the north between Hacienda Dr and I-680 2) Impacts to the Dougherty Rd I/C and I-680 ramps are anticipated. Reconstruct loop on-ramp and add new intersection at the Dougherty Rd I/C. Remove diagonal on-ramp from Dougherty Rd to westbound I-580 to increase weaving distance between interchanges. Earthwork for loop on-ramp, retaining walls, abutment fill is required. Reconstruct westbound I-580 to connector to I-680. Widen Alamo Canal Bridge by 7m. 3) Only one lane HOV connector in each direction is assumed. 4) Pavement reconstruction and retaining walls at HOV conform to I-680 and I-580 are anticipated. 5) Does not provide direct access from HOV direct connector to Stoneridge Dr. Cost will be greater if access is required due to modification of the Stoneridge Dr I/C. Access is provided via existing loop ramp from westbound I-580 to southbound I-680. 5) R/W required north of westbound I-580, between Dougerty Rd and I-680 (playground and business).	$168 to $251
F	**Southbound I-680 HOV, from Alcosta Blvd. to Rte 84 (close gap)**	1) Southbound direction, Alcosta to Rte 84, closing the HOV lane gap (construction is approximately Dublin Blvd to Rte 84, pavement north Dublin to Alcosta is assumed to be adequate for HOV use). 2) Assumes no R/W take. 3) Widening to occur in the median, standard lane width and shoulder width (3.6-meter lane and 3.0-meter shoulder) where possible. 4) Assumes reconstruction of median shoulder is required. 5) Assumes there is no substantial grade difference between northbound and southbound, from I-580 and Happy Valley Road. 6) Median concrete barrier exist between I-580 and Happy Valley Road and will not require a new one. 7) Assumes there is substantial grade difference between northbound and southbound, from Happy Valley Road to Highway 84. 8) Concrete barrier Type 50C will be required to offset the grade difference between northbound and soutbound. Maximum height is assumed to be 1.8m. 9) The cost of Concrete Barrier Type 50C is to be divided between Northbound and Southbound. 10) Bridge widening will be required at Pleasanton-Sunol Road Access Road Overcrossing. 11) Assumes retaining walls are not required. 12) Design exception for median shoulder width is anticipated to be required at some locations. 13) Assumes no new auxiliary lanes	$58 to $87
G	**Northbound I-680 HOV from Rte 84 to Alcosta Blvd. (close gap)**	1) Northbound direction, Rte 84 to Alcosta, closing the HOV lane gap (construction is approximately Dublin Blvd to Rte 84, pavement north Dublin to Alcosta is assumed to be adequate for HOV use). 2) Assumes no R/W take. 3) For this estimate, widening is to occur in the median with standard lane width and standard shoulder width (3.6-meter lane and 3.0-meter shoulder). 4) Assumes existing shoulder pavement is not sufficient for truck traffic and therefore will be replaced. 5) Assumes there is no substantial grade difference between northbound and southbound, from I-580 and Happy Valley Road. 6) Media concrete barrier exists between I-580 and Happy Valley Road and will not require a new one. 7) Assumes there is substantial grade difference between northbound and southbound, from Happy Valley Road to Highway 84. Concrete barrier Type 50C will be required to offset the grade difference between northbound and southbound. Maximum height is assumed to be 1.8m. The cost of Concrete Barrier Type 50C is to be divided between Northbound and Southbound. 8) Bridge widening will be required at Pleasanton-Sunol Road Access Road Overcrossing. 9) No retaining wall is required. 10) Design exception for median shoulder width is anticipated to be required at some locations 9) Assumes no new auxiliary lanes	$58 to $87
H	**Widen Rte 84 from 2 to 4 lanes, from I-680 to Pigeon Pass**	1) Stationing was based on Draft PR (Safety Project) for Highway 84 Safety Project. 2) Assumes the existing cross section is a 2-lane roadway with 8' shoulder on each side. Lane width is 12 ft. No median. 3) For this estimate, widening is to occur on both sides with provision for a median. Assumes median has full structural section. 4) Assumes the structural section of the widened roadway is the same as shown in the Draft PR. Use 90 km/h Design Speed Alternative. 5) New roadway shall have 4 lanes with shoulders and median. Lane width is 3.6m and shoulder width is 2.4m. Median width is 3.6m. 6) Additional lane is required for westbound direction between Sta. 46+15 to 61+50. Draft PR has only one lane at said limit. 7) Assumes the existing structural section of traffic lane is good and reusable, except the existing shoulders. 8) The proposed undercrossing (from Draft PSR) at Vargas Road is to be widened (to accommodate the additional lane for westbound). 9) Right-of-way take is required on both sides of the roadway.	$28 to $42
I and G	**Northbound I-680 HOV, from Rte 237 to Stoneridge Drive Interchange; and auxiliary lanes at selected locations**	1) Based on available information from Caltrans. Project is targeted for advertisement Summer 2008; however, funding is not certain at this time. Caltrans' plan is to split the project into construction phases after project approval and environmental clearance.	$160 $184

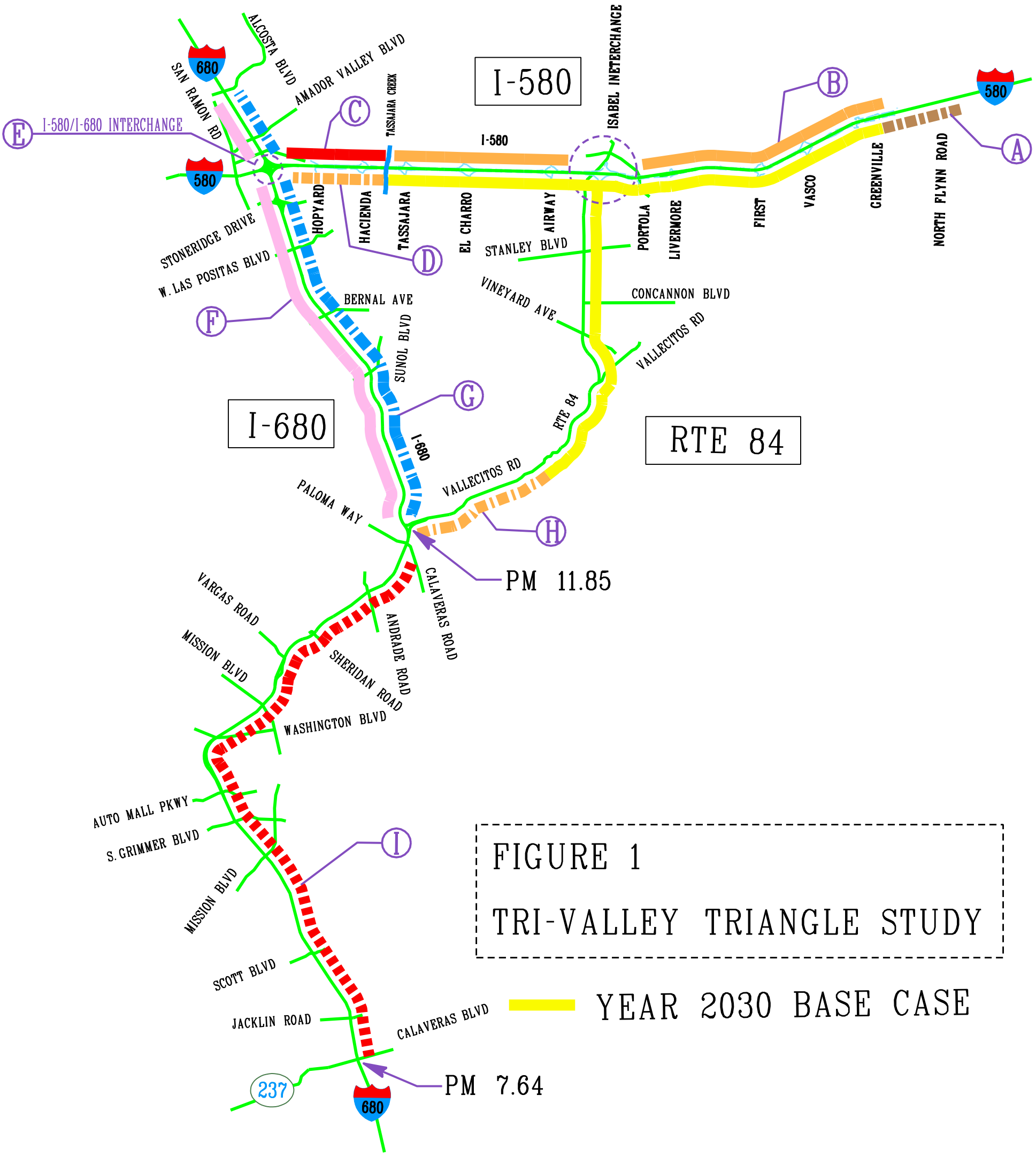

FIGURE 1

TRI-VALLEY TRIANGLE STUDY

YEAR 2030 BASE CASE

FIGURE1.dgn 08/10/2005 05:26:48 PM

TABLE 2 - Rough Order of Magnitude Estimates for Preliminary Improvement Package - from July 26, 2005 Meeting

Preliminary Improvement Package Description	Variations	Preliminary Estimated Project Cost (Based on 2005 dollars)
(1) (Part 1) Widen Route 84 from 2 to 4 lanes, between I-680 and Pigeon Pass (westerly limits of the Caltrans' Realignment and Widening (Safety) Project). (Part 2) Add a Westbound I-580 HOV lane from the from Greenville Road to the new Isabel Interchange.	1) cost estimate includes cost for Pigeon Pass Project. (Pigeon Pass Project cost is approximately $40M, includes support cost of 20%)	$ 102 to 117 million
	2) cost estimate excludes Pigeon Pass Project	$ 58 to 67 million
(2) (Part 1) Add westbound I-580 HOV lane, from Greenville Rd to the direct HOV connector. (Part 2) Add one-lane direct HOV direct connector that conforms to the existing median of I-680 (does not include changes to mixed flow lanes on I-680 or the Stoneridge Dr I/C).	1) One-lane HOV connector with westbound HOV constructed in the existing I-580 median, no R/W acquisition except near the I-580/680 I/C	$ 134 to 154 million
	2) Two-lane HOV connector with westbound HOV constructed in the existing I-580 median, R/W acquisition required at the I-580/680 I/C	$ 218 to 251 million
(3) Same as Number 2, with the addition of the southbound I-680 HOV lane between Alcosta and Rte 84. (Part 1) Add westbound I-580 HOV lane from Greenville Rd to the one-lane direct HOV connector. (Part 2) Add one-lane direct HOV direct connector, westbound I-580 to southbound I-680 that connects to a new southbound I-680 HOV lane in the median. (Part 3) Close HOV gap on southbound I-680 HOV between Alcosta and Rte 84.	N/A	$ 192 to 221 million
(4) Add an eastbound truck climbing lane on I-580 from the truck scales to North Flynn Road.	N/A	$ 25 to 29 million
(5) (Part 1) Widen Route 84 from 2 to 4 lanes between, I-680 to Pigeon Pass. (Part 2) Add a new Eastbound I-580 mixed flow lane from the Isabel Interchange to the Vasco Road Interchange (the mixed flow lane is added in addition to the eastbound HOV lane. (Part 3) **Clarification Required - Does this package include direct connectors at Isabel and Vasco to link the additional westbound I-580 freeway lane with Rte 84?**	1) cost estimate includes the Caltrans project (approximately $39.1M)	Pending Clarification
	2) cost estimate assumes the Caltrans project is completed in Year 2030	Pending Clarification
(6) (Part 1) Add a new northbound I-680 HOV lane, from Rte 237 to Alcosta (closing the gap). (Part 2) Add an one-lane direct HOV connector from northbound I-680 to eastbound I-580. (Part 3) Connect the direct HOV direct connector with the eastbound I-580 HOV, extending all the way to Greenville Road.	1) Includes cost for the Caltrans Northbound I-680 HOV construction from Rte 237 to Rte 84 (approximately Construction Cost of $ 133 million, and 20% support)	$ 268 to 308 million
	2) Excludes cost for the Caltrans Northbound I-680 HOV construction from Rte 237 to Rte 84 (approximately Construction Cost of $ 133 million)	$ 137 to 158 million

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TRI-VALLEY TRIANGLE STUDY
TECHNICAL ADVISORY COMMITTEE
JULY 26, 2005
ROSTER OF MEETING ATTENDANCE
DUBLIN CITY OFFICES, DUBLIN, OAKLAND, CALIFORNIA

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14	Jean Hart, ACCMA			
15	Ben Strumwasser, CirclePoint			
16	Ravi Puttagunta, Parsons			
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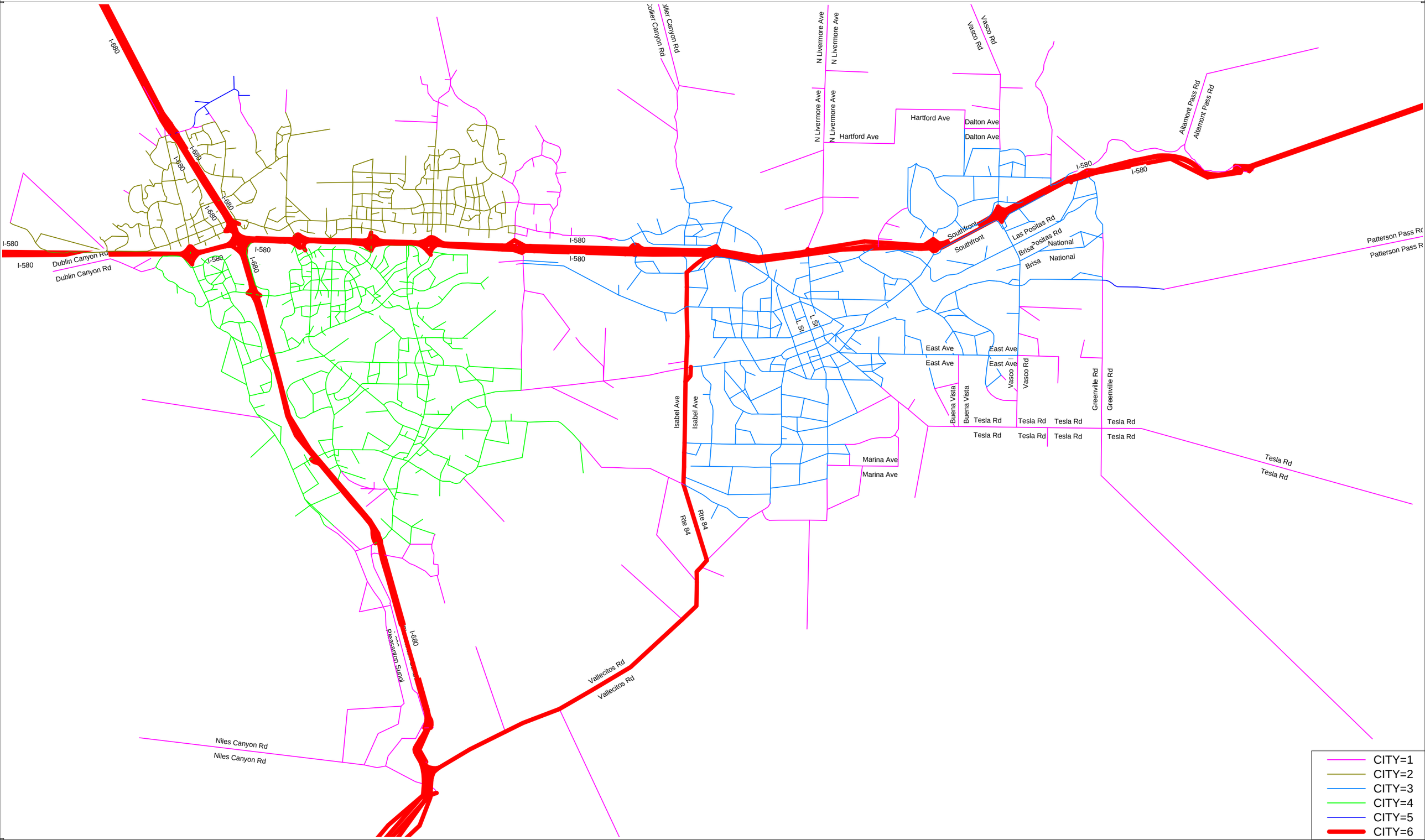
ACCMA Triangle Study
City Codes



Parsons

100 Park Center Plaza, Suite 450 • San Jose, California 95113 • (408) 280-6600 • Fax: (408) 280-7533 • www.parsons.com

Memorandum

TO: Jean Hart, ACCMA

FROM: Parsons

DATE: August 9, 2005

SUBJECT: Tri-Valley Triangle Study – Concept Level Cost Estimates

At the July 26, 2005 TAC meeting, the TAC suggested that Parsons produce rough order of magnitude estimates for the various improvements identified by the team. The information would assist the TAC in making recommendations regarding the improvements or improvements packages that would be tested further and studied as part of the Tri-Valley Triangle Study. Please note that as part of the Tri-Valley Triangle Study, more refined project cost estimates will be developed at a later date for those improvements/improvement packages selected by the TAC and approved by the PAC for the purpose of doing benefit/cost comparisons of the improvements/improvement packages.

The rough cost order of magnitude estimates presented with this memo were developed in a very short period of time and are based on the following.

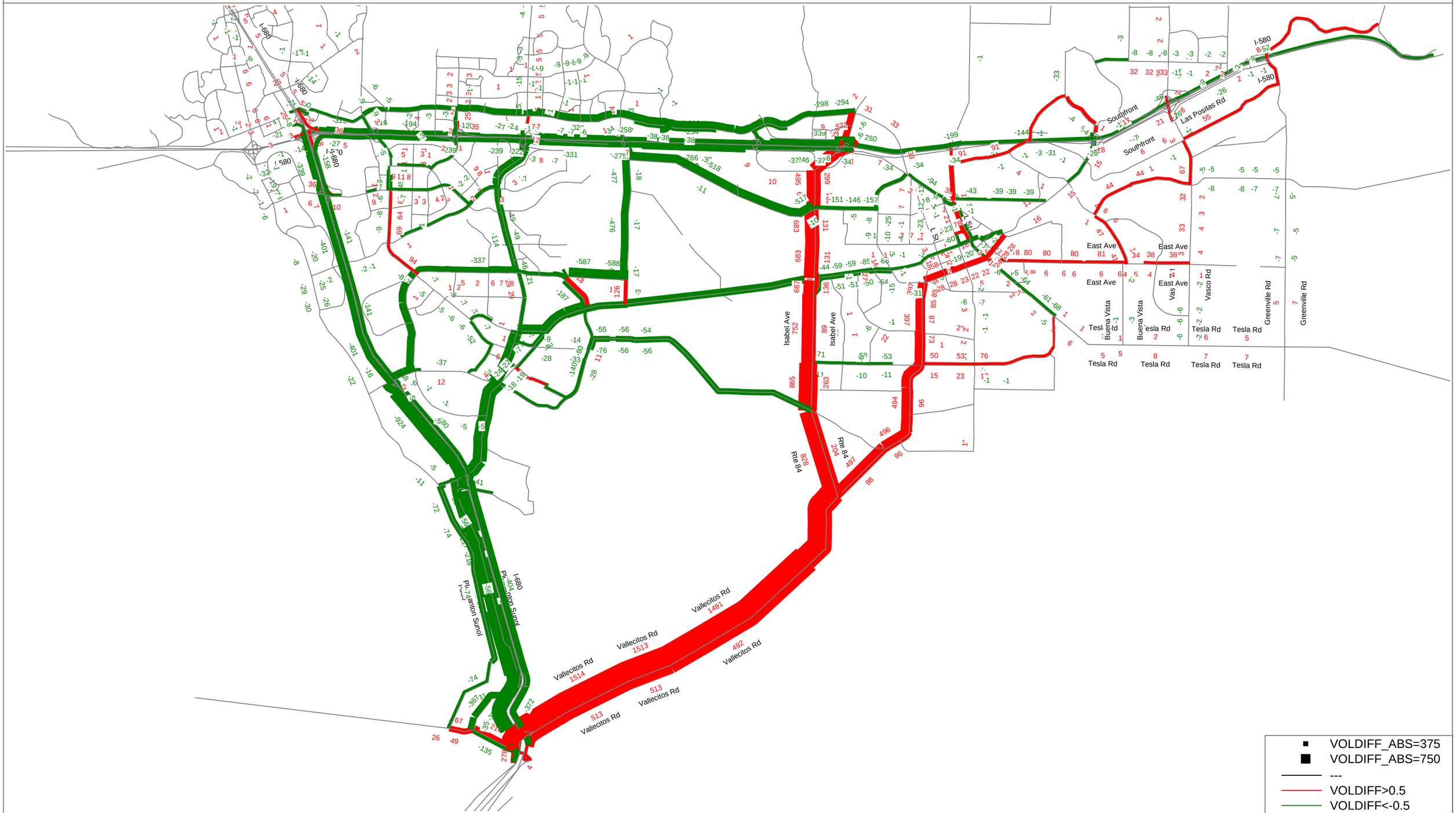
- Available project cost information from other project teams were used when available
- Quantities for major cost items were estimated based on available topographic mapping (detailed calculations were not done)
- Unit prices were taken from recent construction bids for projects similar in size
- Unit cost for structure and retaining wall construction is based on average planning level cost per square foot
- Length and width of pavement construction was scaled from available mapping or plans
- Traffic, drainage, signing, utilities, lighting, and construction misc. items were developed base on a percentage of cost for major cost items
- Minor items were assumed to be 15% of the total item cost
- Roadway Additions were assumed to be 10% of the total item cost
- Mobilization was assumed to be 10% of the total item cost
- Construction contingencies were assumed to be 25% of total construction estimate
- Planning, environmental studies, design and construction support cost are different for some of the estimates. Most of the estimates assume 40%, unless otherwise noted.
- Rough order of magnitude estimates were used for right of way acquisition and utilities relocation cost

Attached to this memo are the following:

1) Table 1 - project cost estimates for the various improvements that may be combined to develop an improvement package.
2) Figure 1 - diagram showing the location and limits of those various improvements in Table 2.
3) Table 2 - a summary of the project cost estimates for the preliminary improvement packages discussed at the July 26, 2005 TAC.

These rough cost estimates are only for the internal use of the TAC and should not be used for any other purposes. They should not be construed as a representation of the project cost for the various improvements/improvement packages, as more detail studies are required.

ACCMA Triangle Study - Sensitivity Analysis
Widen SR84
AM Peak Hour



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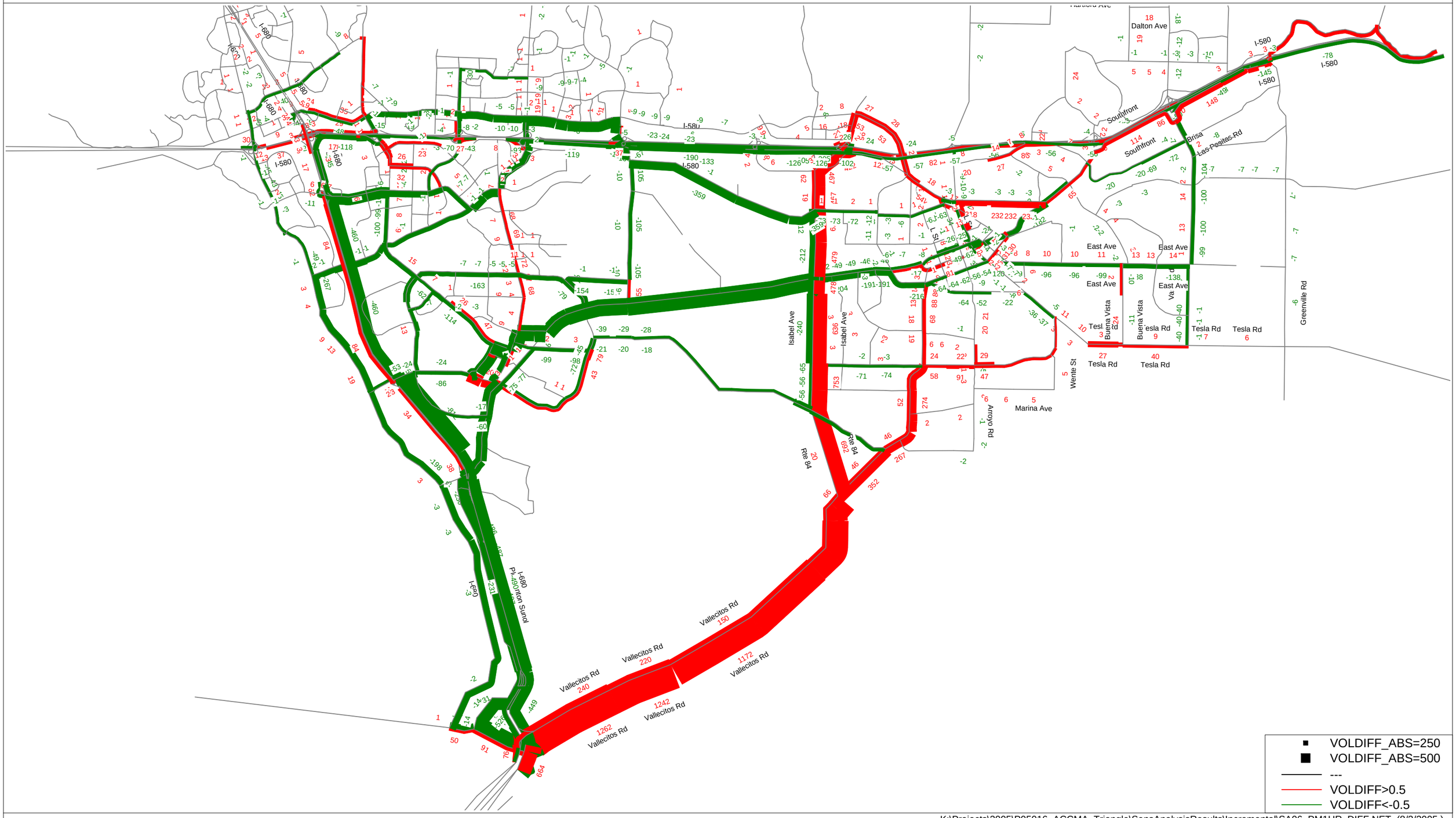
ACCMA Triangle Study - Sensitivity Analysis
Widen SR84
PM Peak Hour



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